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NASA CR-  
144534

(NASA-CR-144534) USER'S GUIDE TO PROGRAM  
FLEXSTAB Final Report (Texas A&M Univ.)  
36 p HC \$3.75

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G3/61 39396



# TEES

TEXAS ENGINEERING EXPERIMENT STATION  
TEXAS A & M UNIVERSITY  
COLLEGE STATION TEXAS 77843



NASA CR-

User's Guide to Program FLEXSTAB

144534

A Final Report

to the

National Aeronautics and Space Administration  
Manned Spacecraft Center

research performed under  
Contract No. NAS 9-11303

by

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February 23, 1975

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Table of Contents

|   | <u>Page</u> |
|---|-------------|
| 1. Summary  | 1           |
| 2. FLEXSTAB Functional Flow                           | 2           |
| 3. Geometry Definition Program                        | 3           |
| 4. Steady Aerodynamic Influence Coefficient Program   | 6           |
| 5. Internal Structural Influence Coefficient Program  | 9           |
| 6. Normal Modes Program                               | 12          |
| 7. Stability Derivations and Static Stability Program | 17          |
| 8. Geometry Definition Plot Program                   | 28          |

Summary

This document represents a user's manual for correctly submitting FLEXSTAB program runs on the UNIVAC 1108 computer system. All major program modules, converted and correctly executed by Texas A&M project personnel, have been included. All CUR control cards have been documented for the user's convenience. The JOB card paramters have also been included in order to provide some idea as to "reasonable" time estimates for the program modules.

### Geometric Definition

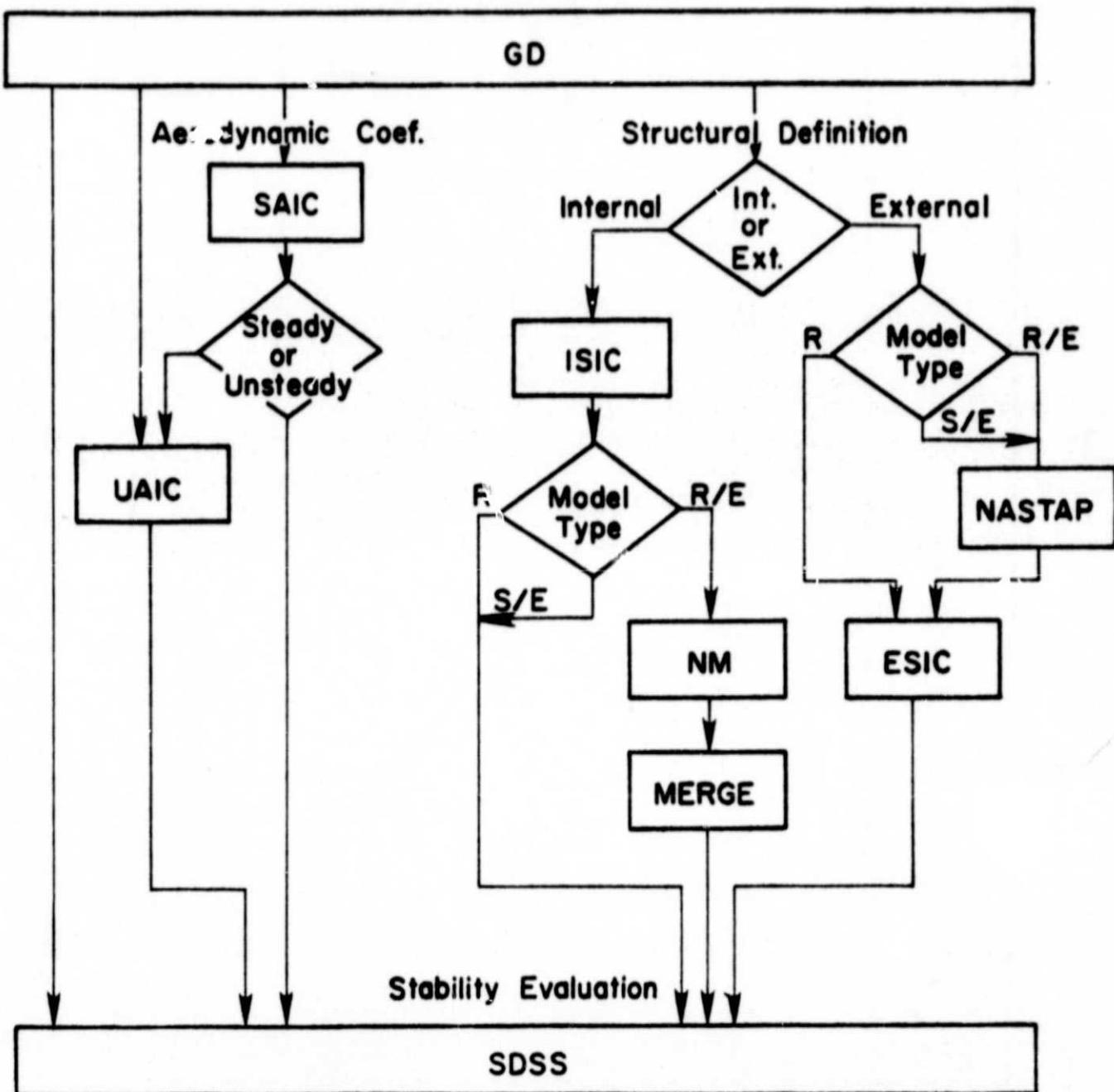


FIG. I FLEXTAB FUNCTIONAL FLOW

Geometry Definition (GD) ProgramInput Required

GD Data Deck

Program Required

GD program in Tape PCF = Tape B

Program Correction Required

None

Output File GeneratedTape A = GD tape = A05090      Geometry descriptionFile Destinies

Tape A: SAIC

UAIC

ISIC

ESIC

SDSS

TH

GD PLOT

Cover Sheet Format

Ref-GD/1

Control Cards

Ref-GD/2

## INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

4

Ref-GD/1

| PROGRAMMER<br>D. Colunga                            |                   |                                      | BADGE NO.<br>1048                           | BOX NO.<br>C-16                | PHONE NO.<br>5971                        | DATE                          | PRIORITY<br>& INITIALS |                     |
|---|-------------------|--------------------------------------|---|--------------------------------|--|-------------------------------|------------------------|---------------------|
| DIVISION CODE<br>FD 32                              | PROG. NO.<br>E169 | PROJ. NO.<br>3696E                   | EST. TIME<br>1                              | MAX. TIME<br>2                 | LINES OUTPUT<br>6k                       | DECK NO.                      |                        |                     |
| OPERATING SYSTEM                                    |                   |                                      |   | TYPE OF RUN                    |  | LOG NO.                       |                        |                     |
| I108 FORTRAN V <input type="checkbox"/>             |                   | 3200 SCOPE <input type="checkbox"/>  | PROD. <input checked="" type="checkbox"/>   | TEST <input type="checkbox"/>  | COMPUTER REQUIREMENTS                    |                               |                        |                     |
| I108 FORTRAN IV <input checked="" type="checkbox"/> |                   | 3200 SMARTS <input type="checkbox"/> | OTHER (EXPLAIN BELOW)                       |                                | I108 <input checked="" type="checkbox"/> | 3200 <input type="checkbox"/> |                        |                     |
| I108 OTHER <input type="checkbox"/>                 |                   | 3200 OTHER <input type="checkbox"/>  |   |                                | OTHER                                    |                               |                        |                     |
| INPUT TAPES   |                   |                                      |   | OUTPUT TAPES                   |  |                               |                        |                     |
| RACK  | UNIT              | REEL NO.                             | FILE NAME                                   | UNIT                           | REEL NO.                                 | FILE NAME                     | SAVE                   | PROCESSING REQUIRED |
| *   | B                 |                                      | PCF   | A                              | A05090                                   | A                             | Yes                    |                     |
|   |                   |                                      |   |                                |  |                               |                        |                     |
|   |                   |                                      |   |                                |  |                               |                        |                     |
|   |                   |                                      |   |                                |  |                               |                        |                     |
|   |                   |                                      |   |                                |  |                               |                        |                     |
|   |                   |                                      |   |                                |  |                               |                        |                     |
| WORKING TAPES                                       |                   |                                      |   |                                |  |                               |                        |                     |
|   |                   |                                      |   | 4060 <input type="checkbox"/>  | REEL NO.                                 | NO. FRAMES                    |                        |                     |
|   |                   |                                      |   | 16 MM <input type="checkbox"/> | 35 MM <input type="checkbox"/>           |                               |                        |                     |
| ABNORMAL STOPS                                      |                   |                                      | TOTAL TAPE DRIVES USED                      |                                |  | ACTUAL TIME USAGE             |                        |                     |
| STOP AT LOC.<br>SR:                                 |                   |                                      | 2   |                                |  |                               |                        |                     |
| LOOPING LOC.<br>THRU                                |                   |                                      | DUMP INSTRUCTIONS                           |                                |  |                               |                        |                     |
| EXCESS OUTPUT                                       |                   |                                      | NO DUMP <input checked="" type="checkbox"/> |                                |  |                               |                        |                     |
| EXCESS TIME   |                   |                                      | DUMP ON STOP                                |                                |  |                               |                        |                     |
|   |                   |                                      | DUMP ON LOOP                                |                                |  |                               |                        |                     |
|   |                   |                                      | OTHER                                       |                                |  |                               |                        |                     |

## PROGRAMMER'S COMMENTS

\* Tape B is a special Texas A&amp;M PCF tape.

## OPERATOR'S COMMENTS

SYSTEM  
OPERATOR

Ref-GD/2

▼P RUN 01048,FD32,C16,3696E,E169,C,2,6  
▼N MSG FILE REQ TAPE 2 EH 432 1 FSTRN 1  
▼ ASG A=A  
▼ ASG B=PCF  
▼ ASG E  
XQT CUR  
TRW B  
IN B  
REL B  
▼ XQT GD

D. COLUNGA

GD DATA DECK

▼ FIN

Steady Aerodynamic Influence Coefficient (SAIC) ProgramInput Required

- (1) Tape A = GD tape = A05090 (File generated by GD run)
- (2) SAIC data deck

Program Required

SAIC in PCF tape (=Tape E)

Program Corrections Required

None

Output Files Generated

- (1) Tape B = SAIC TAPE B = A01827

File Destinies

- (1) Tape B: UAIC  
CAIC  
SDSS

Cover Sheet Format

Ref-SAIC/1

Control Cards

Ref-SAIC/2

SAIC Data Deck

Ref-Boeing Document

## INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

7

Ref-SAIC/1

|                          |                   |                    |                   |                  |                    |             |                        |
|--------------------------|-------------------|--------------------|-------------------|------------------|--------------------|-------------|------------------------|
| PROGRAMMER<br>D. Colunga |                   |                    | BADGE NO.<br>1048 | BOX NO.<br>C-16  | PHONE NO.<br>5971  | DATE<br>6/2 | PRIORITY<br>& INITIALS |
| DIVISION CODE<br>FD-32   | PROG. NO.<br>E169 | PROJ. NO.<br>3696E | EST. TIME<br>50   | MAX. TIME<br>240 | LINES OUTPUT<br>2k | DECK NO.    |                        |

| OPERATING SYSTEM                                    |                                      |                                | TYPE OF RUN                   |  | LOG NO.                       |  |  |
|---|--------------------------------------|--------------------------------|-------------------------------|--|-------------------------------|--|--|
| I108 FORTRAN V <input type="checkbox"/>             | 3200 SCOPE <input type="checkbox"/>  | PROD. <input type="checkbox"/> | TEST <input type="checkbox"/> | COMPUTER REQUIREMENTS                    |                               |  |  |
| I108 FORTRAN IV <input checked="" type="checkbox"/> | 3200 SMARTS <input type="checkbox"/> | OTHER (EXPLAIN BELOW)          |                               | I108 <input checked="" type="checkbox"/> | 3200 <input type="checkbox"/> |  |  |
| I108 OTHER <input type="checkbox"/>                 | 3200 OTHER <input type="checkbox"/>  |                                |                               |  | OTHER                         |  |  |

| INPUT TAPES |      |          |           | OUTPUT TAPES |          |           |   |      |                     |
|-------------|------|----------|-----------|--------------|----------|-----------|---|------|---------------------|
| RACK        | UNIT | REEL NO. | FILE NAME | UNIT         | REEL NO. | FILE NAME | C | SAVE | PROCESSING REQUIRED |
|             | A    | A05090   | A         |              |          |           |   |      |                     |
|             | E    |          | PCF       |              |          |           |   |      |                     |
|             |      |          |           | B            | A01827   | SAIC      | X |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |

| WORKING TAPES |  |  |  | REEL NO.                       | NO. FRAMES                     |
|---------------|--|--|--|--------------------------------|--------------------------------|
|               |  |  |  | 4060 <input type="checkbox"/>  |                                |
|               |  |  |  | 16 MM <input type="checkbox"/> | 35 MM <input type="checkbox"/> |

| ABNORMAL STOPS        |      | TOTAL TAPE DRIVES USED |  | ACTUAL TIME USAGE |  |
|-----------------------|------|------------------------|--|-------------------|--|
| STOP AT LOC.          | SR:  | 3                      |  |                   |  |
| LOOPING LOC.          | TH/U | DUMP INSTRUCTIONS      |  | STOP              |  |
| EXCESS OUTPUT         |      | NO DUMP X              |  |                   |  |
| EXCESS TIME           |      | DUMP ON STOP           |  |                   |  |
| PROGRAMMER'S COMMENTS |      | DUMP ON LOOP           |  | START             |  |
|                       |      | OTHER                  |  |                   |  |

PCF = Special Texas A&amp;M Input Tape.

OPERATOR'S COMMENTS

SYSTEM  
OPERATOR

VZ RUN 01048,FD32,C16,3696E,E169,C,240,2 D. COLUNGA  
VN MSG FILE REQ TAPE 3 FH432 2 FSTRN 16  
V ASG A=A05090  
V ASG E=PCF  
VW ASG B=SAIC  
V ASG C,D,K,L,M,N,O,P,Q,R,S,T,U,V,W,X  
V XQT CUR  
TRW E  
IN E  
ERS  
IN E  
REL E  
V MAP PROG  
SEG AIC-MPAK-\*(CPTGEN,AICGEN,TRNOVR,CAMTHK-\*(CAMBER,THICK))  
MPAK SEG RHEAD-WHEAD-RVEC-WVEC-VLIN-VIP-LOCATE  
V XQT PROG

SAIC DATA DECK (cf REF-Boeing Document)

VFIN

Internal Structural Influence Coefficient (ISIC) ProgramInput Required

- (1) Tape A - GD Tape = A05090 (File Generated by GD Run)
- (2) ISIC Data Deck

Program Required

ISIC in A06973 tape (= Tape Z)

Output Files Generated

- |                     |                                      |
|---------------------|--------------------------------------|
| (1) Tape B = A07178 | Matrix Catalog                       |
| (2) Tape C = A03098 | Symmetric Normal Modes Matrices      |
| (3) Tape D = A13214 | Anti-symmetric Normal Modes Matrices |
| (4) Tape E = A04911 | Symmetric SDSS Matrices              |
| (5) Tape F = A01734 | Anti-symmetric SDSS Matrices         |
| (6) Tape G = A07233 | Elastic Axis Plot Tape               |

File Destinies

- (1) Tape B: NM, SDSS
- (2) Tape C: NM
- (3) Tape D: NM
- (4) Tape E: SDSS, MERGE
- (5) Tape F: SDSS, MERGE
- (6) Tape G: SLOAD, EAPLOT

Cover Sheet Format

Ref-ISIC/1

Control Cards

Ref-ISIC/2

ISIC Data Deck

Ref-Boeing Document

## INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

10

Ref-ISIC/1

|               |           |           |           |           |              |          |                     |
|---------------|-----------|-----------|-----------|-----------|--------------|----------|---------------------|
| PROGRAMMER    |           |           | BADGE NO. | BOX NO.   | PHONE NO.    | DATE     | PRIORITY & INITIALS |
| D. Colunga    |           |           | 1619      | C-16      | 5971         | 6/23     |                     |
| DIVISION CODE | PROG. NO. | PROJ. NO. | EST. TIME | MAX. TIME | LINES OUTPUT | DECK NO. |                     |
| EX 24         | E169      | 3696E     | 120       | 180       | 12k          |          |                     |

| OPERATING SYSTEM |                                     |             | TYPE OF RUN              |   | LOG NO.   |
|------------------|-------------------------------------|-------------|--------------------------|---|---|
| I108 FORTRAN V   | <input type="checkbox"/>            | 3200 SCOPE  | <input type="checkbox"/> | PROD. <input checked="" type="checkbox"/> TEST <input type="checkbox"/> | COMPUTER REQUIREMENTS                                       |
| I108 FORTRAN IV  | <input checked="" type="checkbox"/> | 3200 SMARTS | <input type="checkbox"/> | OTHER (EXPLAIN BELOW)   | I108 <input type="checkbox"/> 3200 <input type="checkbox"/> |
| I108 OTHER       | <input type="checkbox"/>            | 3200 OTHER  | <input type="checkbox"/> |   | OTHER   |

| INPUT TAPES |      |          |           | OUTPUT TAPES |          |           |   |      |                     |
|-------------|------|----------|-----------|--------------|----------|-----------|---|------|---------------------|
| RACK        | UNIT | REEL NO. | FILE NAME | UNIT         | REEL NO. | FILE NAME | C | SAVE | PROCESSING REQUIRED |
|             | A    | A05090   | A         | B            | A07178   | B         |   | Yes  |                     |
|             | Z    | A06973   | Z         | C            | A03098   | C         |   | Yes  |                     |
|             |      |          |           | D            | A13214   | D         |   | Yes  |                     |
|             |      |          |           | E            | A04911   | E         |   | Yes  |                     |
|             |      |          |           | F            | A01734   | F         |   | Yes  |                     |
|             |      |          |           | G            | A07233   | G         |   | Yes  |                     |

|               |   |        |                                |                                |            |
|---------------|---|--------|--------------------------------|--------------------------------|------------|
| WORKING TAPES | G | A07233 | G                              | REEL NO.                       | NO. FRAMES |
|               |   |        | 4060 <input type="checkbox"/>  |                                |            |
|               |   |        | 16 MM <input type="checkbox"/> | 35 MM <input type="checkbox"/> |            |

| ABNORMAL STOPS | TOTAL TAPE DRIVES USED | ACTUAL TIME USAGE |
|----------------|------------------------|-------------------|
| STOP AT LOC.   | 8                      |                   |
| SR:            | DUMP INSTRUCTIONS      |                   |
| LOOPING LOC.   | NO DUMP X              |                   |
| THRU           | DUMP ON STOP           |                   |
| EXCESS OUTPUT  | DUMP ON LOOP           |                   |
| EXCESS TIME    | OTHER                  |                   |

PROGRAMMER'S COMMENTS

OPERATOR'S COMMENTS

S/STEM  
OPERATOR

Z RUN 01619,EX24,C16,3696E,E169,C,180,12 D. COLUNGA  
N MSG FILE REQ TAPE 8 FH432 2 FSTRN 16  
ASG A=A05090  
S ASG B=B  
S ASG C=C  
VS ASG D=D  
VS ASG E=E  
VS ASG F=F  
VS ASG G=G  
V ASG H,I,J,K,L,M,N,O,P,S,T,U,V,W,X,Y  
V ASG Z=A06973  
V XQT CUR  
TRW Z  
IN Z  
REL Z  
V MAP PROG  
SEG ISIC-MPAK-\*(GDPROG,OPTION,THRE,FMAT)  
MPAK SEG VIP-VLIN-RVEC-WVEC-RHEAD-WHEAD-LOCATE  
THRE SEG SIC-\*(SDEF,SAFMAT,TMAT,MMAT)  
V XQT PROG

ISIC DATA DECK 'cf REF-Boeing Document)

VFIN

Normal Modes (NM) ProgramInput Required

- (1) Tape A = ISIC catalog tape = A06909 (File generated by ISIC)
- (2) Tape C = Symm ISIC tape = A06668 (File generated by ISIC)
- (3) Tape D = Asym ISIC tape = A06292 (File generated by ISIC)
- (4) NM Data Deck

Program Required

NM program in T0204 tape = Tape Z

Program Correction Required

- (1) Insert New SUBROUTINE AG6.IE to read as follows:

```
SUBROUTINE AGGIE
DIMENSION MT(12)
REWIND 1
REWIND 2
100 READ (1) I,J,K,MT
      WRITE (2) I,J,K,MT
      IF(I.GT.-1) GO TO 100
      REWIND 1
      REWIND 2
      STOP
      END
```

REASON: Tape A should contain the original ISIC catalog, while tape B contains the altered catalog at the end of Normal Modes execution.

NOTE: (1) This program should precede all Normal Modes runs.  
 (2) Tape B from ISIC should be mounted on unit A (not unit B)

- (2) Statement number 74 of MONITR: New Insert to read as follows:

```
IF(ICF.EQ.0) GO TO 100
```

REASON: Check value of ICF to get out of DO LOOP.

- (3) Statement number 26 of CTINIT:

Delete 4 statements and newly insert to read as follows:

```
Delete COMMON/CT01/LCAT
COMMON/CT02/NFOUT
COMMON/CT03/LFOUT(6)
COMMON/CT04/NMOUT(6)
```

```
Insert COMMON/CT01.LCAT,NFOUT,LFOUT(6),NMOUT(6)
```

REASON: Make common statement compatible with the other subroutines

- (4) Statement number 46 and 47 of DSN: New Insert to read as follows:

```
REWIND 7
REWIND 8
```

REASON: Rewind Tape E and Tape F

Output File Generated

- |                                       |  |
|---------------------------------------|--|
| (1) Tape B = NM catalog tape = A08012 | Matrix catalog from ISIC to SDSS           |
| (2) Tape E = Symm NM tape = A01078    | Symmetric Matrices to SDSS program         |
| (3) Tape F = Asym NM tape = A01344    | Anti-symmetric Matrices to SDSS<br>program |
| (4) Tape G = Shape NM tape = A08045   | Model shape tape to NMPLLOT program        |

File Destinies

- (1) Tape B: SDSS
- (2) Tape E: MERGE
- (3) Tape F: MERGE
- (4) Tape G: NMPLLOT

Cover Sheet Format

Ref-NM/1

Control Cards

Ref-NM/2

## INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

Ref-NM/1

|                          |                   |                    |                   |                 |                    |              |                     |
|--------------------------|-------------------|--------------------|-------------------|-----------------|--------------------|--------------|---------------------|
| PROGRAMMER<br>D. Colunga |                   |                    | BADGE NO.<br>1619 | BOX NO.<br>C-16 | PHONE NO.<br>5971  | DATE<br>6/30 | PRIORITY & INITIALS |
| DIVISION CODE<br>EX 24   | PROG. NO.<br>E169 | PROJ. NO.<br>3696E | EST. TIME<br>40   | MAX. TIME<br>50 | LINES OUTPUT<br>5k | DECK NO.     |                     |

| OPERATING SYSTEM |                                     |             | TYPE OF RUN              |   | LOG NO                        |  |
|------------------|-------------------------------------|-------------|--------------------------|---|-------------------------------|--|
| I108 FORTRAN V   | <input type="checkbox"/>            | 3200 SCOPE  | <input type="checkbox"/> | PROD. <input checked="" type="checkbox"/> | TEST <input type="checkbox"/> | COMPUTER REQUIREMENTS  |
| I108 FORTRAN IV  | <input checked="" type="checkbox"/> | 3200 SMARTS | <input type="checkbox"/> | OTHER (EXPLAIN BELOW)                     |                               | I108 <input checked="" type="checkbox"/> 3200 <input type="checkbox"/> |
| I108 OTHER       | <input type="checkbox"/>            | 3200 OTHER  | <input type="checkbox"/> |   |                               | OTHER  |

| INPUT TAPES |      |          |           | OUTPUT TAPES |          |           |   |      |                     |
|-------------|------|----------|-----------|--------------|----------|-----------|---|------|---------------------|
| RACK        | UNIT | REEL NO. | FILE NAME | UNIT         | REEL NO. | FILE NAME | C | SAVE | PROCESSING REQUIRED |
|             | A    | A06909   | A         | B            | A08012   | B         |   | Yes  |                     |
|             | C    | A06668   | C         | E            | A01078   | E         |   | Yes  |                     |
|             | D    | A06292   | D         | F            | A01344   | F         |   | Yes  |                     |
|             | Z    | T0204    | Z         | G            | A08045   | G         |   | Yes  |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |

| WORKING TAPES |  |  |  | REEL NO.                       | NO. FRAMES                     |
|---------------|--|--|--|--------------------------------|--------------------------------|
|               |  |  |  | 4060 <input type="checkbox"/>  |                                |
|               |  |  |  | 16 MM <input type="checkbox"/> | 35 MM <input type="checkbox"/> |
|               |  |  |  |                                |                                |
|               |  |  |  |                                |                                |
|               |  |  |  |                                |                                |

| ABNORMAL STOPS       | TOTAL TAPE DRIVES USED | ACTUAL TIME USAGE  |
|----------------------|------------------------|--|
| STOP AT LOC.<br>SR:  | 8                      |  |
| LOOPING LOC.<br>THRU | DUMP INSTRUCTIONS      |  |
| EXCESS OUTPUT        | NO DUMP X              | STOP   |
| EXCESS TIME          | DUMP ON STOP           |  |
|                      | DUMP ON LOOP           | START  |
|                      | OTHER                  |  |

PROGRAMMER'S COMMENTS

\*Tape Z = T0204 is a special Texas A&amp;M Tape

OPERATOR'S COMMENTS

SYSTEM OPERATOR

▽P RUN 01619,EX24,C16,3696E,E169,C,50,5  
▽N MSG FILE REQ TAPE 8 FH432 2 FSTRN 8  
▽ ASG A=A06909  
▽S ASG B=A08012  
▽ ASG C=A06668  
▽ ASG D=A06292  
▽S ASG E=A01078  
▽S ASG F=A01344  
▽S ASG G=A08045  
▽ ASG H,I,J,K,L,M,N,P  
▽ FOR AGGIE

D. COLUNGA

AGGIE SOURCE DECK

▽ XQT AGGIE  
▽ XQT CUR  
TRW A  
REL A  
▽ ASG Z=T0204  
▽ XQT CUR  
TRW Z  
IN Z  
TRW Z  
REL Z  
▽ FOR,\* MONITR,MONITP

-73

IF(ICF.EQ.0) GO TO 100

▽ FOR,\* CTINIT,CTINIT

-26,29

COMMON/CT01/LCAT,NFOUT,LFOUT(6),NMOUT(6)

▽ FOR,\* DSN,DSN

-45

REWIND 7

REWIND 6

▽ MAP NMP

SEG NM-MPAK-\*(INCONT,SHAPE,FNMAT,NMOUT)

MPAK SEG VIP-VLIN-RVEC-WVEC-RHEAD-WHEAD-LOCATE

▽ XQT NMP

NM DATA DECK

▽FIN

Stability Derivatives and Static Stability (SDSS) Program

## I Generate Absolute SDSS Program

### **Program Required**

### Symbolic and relocatable SDSS in PCFC tape (= Tape C)

## Output Files Generated

## File Destinies

### Tape G: SDSS

### Cover Sheet Format

Ref-SDSS-I/1

### Control Cards

Ref-SDSS-I/2

## INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

18

Ref-SDSS-I/1

|                          |                   |                    |                   |                 |                   |               |                        |
|--------------------------|-------------------|--------------------|-------------------|-----------------|-------------------|---------------|------------------------|
| PROGRAMMER<br>D. Colunga |                   |                    | BADGE NO.<br>1048 | BOX NO.<br>16-C | PHONE NO.<br>5971 | DATE<br>6/16  | PRIORITY<br>& INITIALS |
| DIVISION CODE<br>FD 32   | PROG. NO.<br>E169 | PROJ. NO.<br>3696E | EST. TIME<br>5    | MAX. TIME<br>6  | LINES OUTPUT<br>2 | DECK NO.<br>1 |                        |

| OPERATING SYSTEM                                       |   |                                | TYPE OF RUN                              |  | LOG NO.                       |  |  |
|--|---|--------------------------------|--|--|-------------------------------|--|--|
| I108 FORTRAN V<br><input type="checkbox"/>             | 3200 SCOPE<br><input type="checkbox"/>  | PROD. <input type="checkbox"/> | TEST <input checked="" type="checkbox"/> | COMPUTER REQUIREMENTS                    |                               |  |  |
| I108 FORTRAN IV<br><input checked="" type="checkbox"/> | 3200 SMARTS<br><input type="checkbox"/> | OTHER (EXPLAIN BELOW)          |  | I108 <input checked="" type="checkbox"/> | 3200 <input type="checkbox"/> |  |  |
| I108 OTHER<br><input type="checkbox"/>                 | 3200 OTHER<br><input type="checkbox"/>  |                                |  |  | OTHER                         |  |  |

| INPUT TAPES |      |          |           | OUTPUT TAPES |          |           |   |      |                     |
|-------------|------|----------|-----------|--------------|----------|-----------|---|------|---------------------|
| RACK        | UNIT | REEL NO. | FILE NAME | UNIT         | REEL NO. | FILE NAME | C | SAVE | PROCESSING REQUIRED |
|             | C    | PCFC     | C         | G            | A08126   | G         |   | Yes  |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |
|             |      |          |           |              |          |           |   |      |                     |

| WORKING TAPES |  |  |  | REEL NO.                       |                                | NO. FRAMES |  |
|---------------|--|--|--|--------------------------------|--------------------------------|------------|--|
|               |  |  |  | 4060 <input type="checkbox"/>  |                                |            |  |
|               |  |  |  | 16 MM <input type="checkbox"/> | 35 MM <input type="checkbox"/> |            |  |

| ABNORMAL STOPS |      | TOTAL TAPE DRIVES USED                      |              | ACTUAL TIME USAGE  |  |
|----------------|------|---|--------------|--|--|
| STOP AT LOC.   | SR:  | 2   |              |  |  |
| LOOPING LOC.   | THRU | DUMP INSTRUCTIONS                           |              |  |  |
| EXCESS OUTPUT  |      | NO DUMP <input checked="" type="checkbox"/> | DUMP ON STOP | STOP   |  |
| EXCESS TIME    |      | DUMP ON LOOP                                |              | START  |  |
|                |      | OTHER                                       |              |  |  |

## PROGRAMMER'S COMMENTS

\* PCFC is a special Texas A&amp;M PCF Tape

## OPERATOR'S COMMENTS

SYSTEM  
OPERATOR

VP RUN 01048,FD32,C16,3696E,E169,C,6,1 D. COUINGA  
VN MSG FILE REQ TAPE 2 FH432 0 FSTRN 1  
VW ASG C=PCFC  
V ASG E  
V ASG G=A08126  
V COM 03477775  
V XQT CUR  
TRW C  
IN C  
ERS  
IN C  
TRW C  
TRW E  
TWR E, CARDIN/CODE  
TWR E,DCONRL/CODE  
TWR E,DEXDW/CODE  
TWR E,DPERT/CODE  
TWR E,DSTAB/CODE  
TWR E,DWT/CODE  
TWR E,DGYRO/CODE  
TWR E,FA/CODE  
TWR E,FT/CODE  
TWR E,FTOTAL/CODE  
TWR E,F2F3/CODE  
TWR E,MATPRT/CODE

TWR E,SPECS/CODE

TWR E,TA/CODE

TWR E,TMDATA/CODE

TWR E,TMPRT/CODE

TWR E,TRIM/CODE

TWR E,TRIMCC/CODE

TWR E,TRIMIT/CODE

TWR E,TS/CODE

TWR E,WTDATA/CODE

TWR E,WTDER/CODE

TWR E,CSAB/CODE

TWR E,CINVER/CODE

TWR E,VIPA/CODE

TWR E,DATE/CODE

TWR E,INTURP/CODE

TWR E,DATA/CODE

TEF E

ERS

TRW E

IN E

TRW E

▽ MAP CARDAL,CARDAL

SEG CARDIN-DPERT-DWT-DSTAB-DCONRL-DGYRO-DTRST-MATPRT-;

SPECS-INTURP-DATA-DATE-DEXDW

DEF CARDIN

▽ MAP TRIA,TRIA  
SEG TRIM-TRIMIT-FTOTAL-TMPRT-CINVER-CSAB-WTDER-F2F3-;  
WTDATA-TRIMCC-FT-FA-VIPA-FS-TA-TS-TMDATA  
DEF TRIM

▽ XQT CUR  
TOC  
TRW C  
TRW E  
OUT E  
TEF E  
TRW E  
ERS  
IN C  
ERS  
IN C  
TRI C  
IN E  
TRI E

▽ MAP SDSSPE,SDSSPE  
SEG SDSS-MPAK-\*(ONE,ENGINE,TRANS,DUAL,BASIC,SIX,POST)  
MPAK SEG RHEAD-WHEAD-RVEC-WVEC-VLIN-VIP  
ONE SEG PREPAR-\*(CARDIN,TAPEIN)  
SIX SEG STACON-\*(DONE,TRIM,SHAPE,INTDW,SDSP,PERT1,P2,PERT3,PERT4)  
P2 SEG PERT2-\*(RDULSC-VAICA-UAICS-UDATA-UCTRAN,UPRES)

▽ ABS SDSSPE,SDSSDE

Ref-SDSS-I/2-4/4

v XQT CUR

TOC

TRW G

OUT G,2

TEF G

TRI G

v EOF

vFIN

Stability Derivatives and Static Stability (SDSS) ProgramII SDSS RunInput Required

- |                                      |                          |
|--------------------------------------|--------------------------|
| (1) Tape A = GD tape = A05090        | (File generated by GD)   |
| (2) Tape B = SAIC tape = A01827      | (File generated by SAIC) |
| (3) Tape C = Catalog tape = A08118   | (File generated by ISIC) |
| (4) Tape D = Symm ISIC tape = A14061 | (File generated by ISIC) |
| (5) Tape E = Asym ISIC tape = A12922 | (File generated by ISIC) |
| (6) SDSS Data Deck                   |                          |

Program Required

Tape Z = ABS SDSS tape = A08126 (File generated by SDSS-1)

Program Correction Required

None

Output File Generated

- |                         |  |
|-------------------------|--|
| (1) Tape F = SDSS tape  | { Loads matrices for SLOADS<br>Data for CER and TH |
| (2) Punched card output |  |

File Destinies

Tape F: SLOADS  
CER  
TH

Cover Sheet Format

Ref SDSS-II/1

Control Cards

Ref SDSS-II/2

## INSTRUCTIONS FOR CENTRAL COMPUTER COMPLEX COMPUTER RUNS

24

Ref-SDSS-II/1

|                          |                  |                    |                 |                   |                    |                        |
|--------------------------|------------------|--------------------|-----------------|-------------------|--------------------|------------------------|
| PROGRAMMER<br>J. Colunga |                  | BADGE NO.<br>1619  | BOX NO.<br>C-16 | PHONE NO.<br>5971 | DATE<br>6/23       | PRIORITY<br>& INITIALS |
| DIVISION CODE<br>EX 24   | PROG NO.<br>E169 | PROJ. NO.<br>3696E | EST TIME<br>10  | MAX TIME<br>15    | LINES OUTPUT<br>5k | DECK NO.               |

| OPERATING SYSTEM |                                     |             | TYPE OF RUN              |  | LOG NO.                       |  |
|------------------|-------------------------------------|-------------|--------------------------|--|-------------------------------|--|
| HOB FORTRAN V    | <input type="checkbox"/>            | 3200 SCOPE  | <input type="checkbox"/> | PROD <input checked="" type="checkbox"/> | TEST <input type="checkbox"/> | COMPUTER REQUIREMENTS                                      |
| HOB FORTRAN IV   | <input checked="" type="checkbox"/> | 3200 SMARTS | <input type="checkbox"/> | OTHER (EXPLAIN BELOW)                    |                               | HOB <input type="checkbox"/> 3200 <input type="checkbox"/> |
| HOB OTHER        | <input type="checkbox"/>            | 3200 OTHER  | <input type="checkbox"/> | OTHER                                    |                               |  |

| INPUT TAPES   |      |          |           | OUTPUT TAPES |          |           |   |      |                     |  |
|---------------|------|----------|-----------|--------------|----------|-----------|---|------|---------------------|--|
| RACK          | UNIT | REEL NO. | FILE NAME | UNIT         | REEL NO. | FILE NAME | C | SAVE | PROCESSING REQUIRED |  |
|               | A    | A05090   | A         | F            |          | F         |   | Yes  |                     |  |
|               | B    | A01827   | B         |              |          |           |   |      |                     |  |
|               | C    | A08118   | C         |              |          |           |   |      |                     |  |
|               | D    | A140061  | D         |              |          |           |   |      |                     |  |
|               | E    | A12922   | E         |              |          |           |   |      |                     |  |
|               | Z    | A08126   | Z         |              |          |           |   |      |                     |  |
| WORKING TAPES |      |          |           |              |          |           |   |      |                     |  |

|  |  |  |                                |                               |            |
|--|--|--|--------------------------------|-------------------------------|------------|
|  |  |  | 4060 <input type="checkbox"/>  | REEL NO.                      | NO. FRAMES |
|  |  |  | 16 MM <input type="checkbox"/> | 35MM <input type="checkbox"/> |            |

|                      |   |   |
|----------------------|---|---|
| ABNORMAL STOPS       | TOTAL TAPE DRIVES USED<br><u>7</u>          | ACTUAL TIME USAGE   |
| STOP AT LOC.<br>SR   | DUMP INSTRUCTIONS                           |  <input type="text"/> |
| LOOPING LOC.<br>THRU | NO DUMP <input checked="" type="checkbox"/> |  <input type="text"/> |
| EXCESS OUTPUT        | DUMP ON STOP                                | <input type="text"/>  |
| EXCESS TIME          | DUMP ON LOOP                                | <input type="text"/>  |
|                      | OTHER                                       | <input type="text"/>  |

PROGRAMMER'S COMMENTS

OPERATOR'S COMMENTS

SYSTEM  
OPERATOR

vP RUN 01048,FD32,C16,3696E,E169,C,15,5 D. COLUNGA  
VN MSG FILE REQ TAPE 7 FH432 2 FSTRN 16  
VN MSG PUNCHED CARD OUTPUT  
v ASG A=A05090  
v ASG B=A01827  
v ASG C=A08118  
v ASG D=A14061  
v ASG E=A12922  
v ASG F=F  
v ASG Z=A08126  
v ASG I,J,K,L,N,O,P,Q,R,S,T,U,V,W,X,Y  
v XQT CUR  
TRW Z  
IN Z  
REL Z  
v XQT SPSSDE

## SDSS DATA DECK

vFIN

## Program To Fix Up SDSS

v RUN  
vN MSG TAPE 2 FH432 0 FSTRN 2  
v ASG A= Current SDSS PCF Tape  
v ASG B=B  
v ASG C,D  
v COM 03477775  
v XQT CUR  
TRW A  
FIND A,SPECS/SYMBOLIC  
TRD A  
v FOR, \*SPECS, SPECS  
-211  
REWIND NT17  
v XOT CUR  
TRW C  
OUT C,1 SYMBOLIC  
TEF C  
TRW D  
OUT D,3 RELOCATABLE  
TEF D  
ERS  
TRW A  
TRW C  
IL A  
IN C  
TRW B  
OUT B UPDATED SYMBOLIC FILE  
TEF B  
ERS  
IN A  
TRW D  
IN D  
OUT B RELOCATABLE FILE UPDATED  
TEF B

TRW A  
TRW B  
REL A  
ERS  
IN B  
LIST SPECS  
TRW B  
REL B  
v FIN

### Geometry Definition Plot Program (GD PLOT)

#### Input Required

- (1) GD Tape = ZZ0424 (Generated by GD)
- (2) GD PLOT Data Deck

#### Program Required

GD PLOT program (source) Deck consist of

- (1) GDPL
- (2) PGD
- (3) LOCATE and
- (4) Subprogram of the CALCOMP and GERBER basic software namely PLOT, LINE, AXIS, NUMBER, SCALE, SYMBOL, STOPP, etc.
- (5) Subprogram in S/360 Library such as DATE

#### Program Change Required

Subroutine STOPP (equivalent to LINE4 of CALCOMP package) should be added to the last plot program.

#### Output Generated

- (1) GERBER Tape (Used as the input data for GERBER plotter: 7track)
- (2) GERBER plotted sheet
- (3) "Geometric Data from Geometry Definition File" (printed sheet)

#### Job Control Cards

Ref-GDPL-1

#### OS/360 Job Ticket

Ref-GDPL-2

#### GERBER Job Ticket

Ref-GDPL-3

#### Work Statistics

- (1) IBM S/360 Card in 910  
Card out 0

Lines 1932 line  
Time 1.12 min.  
Cost \$8.52  
(2) GERBER 622 Time about 40 min.

Ref-GDPL-1

```
//DQ835    JOB (909T4,3-C--,002,003,DC)," D. COLUNGA  SPACE SHUTTLE  "
/*CLASS      F          230k - 320k           TAPE SETUP
/*SETUP
// EXEC GERBER,PARM,FORT=BCD,REGION=320k
//FORT.SYSIN DD *
```

## GDPL SOURCE DECK

```
//GO.FT01F001 DD UNIT=TAPE9,
//    VOL=SER=ZZ0424,
//    DISP=(OLD,PASS),
//    LABEL=(1,NL),
//    DCB=(RECFM=VSB,LRECL=7196,BLKSIZE=7200)
//GO.SYSIN DD *
```

## GDPL DATA DECK

/\*

Re: GDPR-2

JOB

**OS/360 JCB TICKET**

Date \_\_\_\_\_

| Job Name      | DPSR # | User Name  | Return To | Run Time | Lines              | Cards    |
|---------------|--------|------------|-----------|----------|--------------------|----------|
| 477 DQ835     | 909T4  | D. Colunga | 3-C       | 002      | 003                | 0        |
| User Comments |        |            | Class     | F        | Requested Priority | Assigned |

### Operator Comments

Program terminated normally  Yes

□ No

Time turned in \_\_\_\_\_

No specify system ABEND Code \_\_\_\_\_ I/O Error on \_\_\_\_\_

**Time Executed**

Step 9.  Yes  No [CL] Error  Yes  No

**Time Executed**

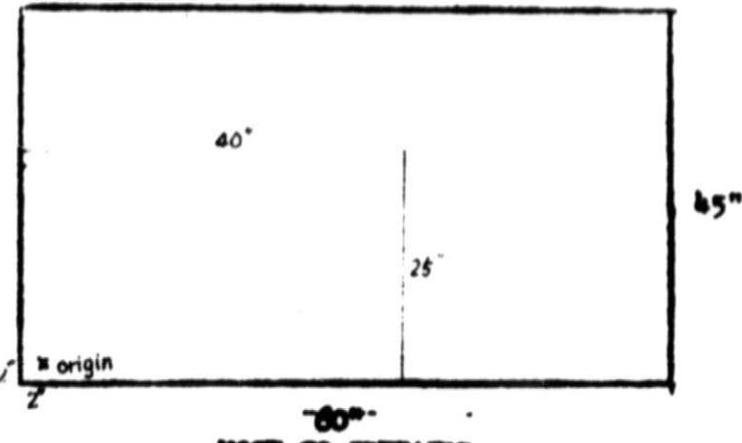
Stop 6  Yes  No JCL Error  Yes  No

**Time Executed**

## GERBER 622 JOB TICKET

USER NAME D. Colunga DATE \_\_\_\_\_ CAMPUS PHONE \_\_\_\_\_ACCOUNT NUMBER \_\_\_\_\_ TAPE NUMBER ZZ0455 SIGNATURE \_\_\_\_\_

On the plotter area below, roughly sketch your expected results. Clearly show the starting point for the plot, and note the total width and height of your drawing.

NOTE TO OPERATORNUMBER OF FILES ON TAPE 1 NUMBER OF PLOTS PER FILE 1SCALE AT WHICH PLOT IS TO BE DRAWN: .5  2 3 4 5 6 7 8 9 10 16  
-feincircles-PFF NO. \_\_\_\_\_, TYPE B,P COLOR BlackTYPE OF PAPER: BOND VELLUM OTHERCOMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DO NOT WRITE BELOW THIS LINE

DATE PLOTTED \_\_\_\_\_ TIME OF DAY \_\_\_\_\_ PLOT TIME \_\_\_\_\_

STARTING TDE \_\_\_\_\_ FINISH TDE \_\_\_\_\_

REPILOT FILE \_\_\_\_\_ STOP \_\_\_\_\_

ORIGINAL PAGE IS  
OF POOR QUALITY

RESTART FILE \_\_\_\_\_ STOP \_\_\_\_\_

## Program Correction For GDPL

### 1. Problem

GDPL was originally programmed for plotting data using the CALCOMP. This program could be used for the GERBER plotter except that in the GERBER the last line was not produced.

### 2. Program Change Suggestion

On the GERBER CALL STOPP gives the required final line.

Therefore in GDPL

#### ORIGINAL PROGRAM

CARD #

```

0061   60 READ (NTGD) (STOR(I),I=1,10),X0,Y0,Z0,THETR,STOR(11)
          (Comment: READ NEW DATA from GD tape)
0062      IF(STOR(1).EQ.0) GO TO 400
          '                               (Comment: Check if DATA is completed)
          '
          '
          '
          '
          '
0352   400 PGNU=PGNU+15.
0353      CALL PLOT (PGNU,-YPAGE,-3) (To reset origin for next file)
0354      CALL PGD (NTGD,KFILGD)      (To print GDTAPE)

```

#### Correction

Insert      CALL STOPP    between 0353 and 0354

### 3. Document

There are no documents containing GERBER instructions. However, subroutine "STOPP" is equivalent to subroutine "LINE4" of CALCOMP basic package.

Subroutine    LINE4 (from LOCAL OS/360 Library Subroutines pp 30.0)

LINE4 - is used to purge the buffer to insure that the last plot of a job is complete. An end file mark is placed on the plot tape. LINE4 should be the last plotting routine called and should only be called once.

CALL LINE4   No arguments are used.